

If the causative agent has not been identified—and I might echo Dr. Kunin's statement, which I like—at least make the effort to do those diagnostic techniques which will provide the answer, and as a result, an ineffective mode of therapy is selected, the infectious disease may advance, remain dormant until therapy is discontinued and then relapse, or a cure may result from the response of the patient's natural defense mechanism.

The latter occurs particularly in patients with virus diseases, whether they receive antibiotics or not, because in that instance the disease itself is limited, and the antibiotics really are not specific and play no role in the curative method, except at the present time I should modify that by saying, there is on the horizon some agents which may change that, hopefully.

The initial use of an ineffective drug or combination of drugs may actually interfere with further attempts to identify the etiologic agent and thus, place the patient in a hazardous situation since further therapy must be selected empirically.

In this situation the physician must rely on his observations and experience in choosing a therapeutic agent. He cannot plan the optimum duration of therapy or anticipate the possible complications of the illness. Morbidity, complications, mortality and expense are increased.

Conversely, when the etiologic agent is identified, the physician can institute specific therapy with an anti-infective agent immediately. He can select a preparation and mode of administration that will better assure adequate concentration of the drug at the site of infection, plan the probable duration of therapy, and foresee possible complications. Under such circumstances, mortality rates, morbidity, complications and expenses are kept at a minimum.

The cure or prevention of infectious disease with avoidance of drug-induced deleterious effects is the goal of antimicrobial therapy; thus, in addition to the harmful effects that may result from the use of an inappropriate agent, the physician must keep in mind the deleterious effects associated with the use of specific agents. For example, penicillin may cause allergic reactions ranging from relatively mild and reversible reactions such as dermatitis, pruritis and fever, to immediate anaphylaxis and death. Some anti-infective agents can cause deafness, aplastic anemia, hemolytic reactions, hepatic damage and injury to the kidneys. If the normal resident bacterial flora is disturbed, transient micro-organisms may proliferate and produce disease. The overuse of anti-infective agents results in the development of resistance of micro-organisms to a therapeutic agent.

Now, selection of anti-infective agents.

In table 1 are listed the common etiologic agents which produce infectious disease in humans.

I have prepared this table to give a perspective. There are listed the different kinds of bacteria, and there are many of them of different generic names. And each genus has many species. Each one of those bacterial names is the generic name, and there are many species and varieties of each. Each one differs. Each one produces a different kind of disease. And each one reacts differently to the various anti-infective agents that we have.